19 November 2003

# ANOMALIES RELATED TO RECENT SOLAR ACTIVITY


**Collected by David Webb from various sources for events arising from recent flares, CMEs, and geomagnetic storms.**

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[Forwarded by Joe H. Allen (SCOSTEP) as per telcon with D. Webb]

**Satellites in red are in Earth orbit.**
**Satellites in blue are outside earth orbit.**
**Actions in green are contingency responses to warnings.**

**Oct. 23: *Genesis* solar wind satellite at L1 entered safe mode. Normal operations resumed on Nov. 3.**

**Oct. 24: Airlines rerouted polar flights due to bad HF/VHF communication.**

***Midori-2* Earth-observing satellite failed, probably lost; Safe mode, Power dropped, Telemetry lost (23:55).**

***Stardust* comet mission went into safe mode due to read errors; recovered.**

***Chandra* X-ray astronomy satellite observations halted due to high radiation levels (09:34 EDT). Restarted Oct. 25.**

***GOES-9, 10 and 12* had high bit error rates (9 and 10) and magnetic torquers disabled (12) due to activity.**

**Oct. 25: *RHESSI* solar satellite had spontaneous rest of CPU (10:42).**

**Oct. 26: *SMART-1* had auto shutdown of engine due to increased radiation level in lunar transfer orbit (19:23).**

**One instrument on *Integral* satellite went into safe mode because of increased radiation.**

***Chandra* observations halted again autonomously. Later resumed.**

**Oct. 27: *NOAA-17* AMSU-A1 lost scanner.**
***GOES-8* X-ray Sensor turned itself off and could not be recovered.**

**Oct. 28 - 30:**

**Astronauts on *Intl. Space Station* went into service module for radiation protection.**

**FAA issued first-ever alert on radiation doses received by airplane passengers above 25K ft. [see also information on 29-30 Sept 1989 proton event that set off on-board warnings on commercial SSTs --- JHA]**

**Power system failure in Malmo, Sweden (Oct. 30, 21:07 LT).**

***ACE & Wind* solar wind satellites lost plasma observations; Electron sensors of *GOES* satellite in geosynchronous orbit saturated.**

***Chandra* observations halted again on Oct. 28 autonomously due to radiation. Observations resumed Nov. 1.**

***Kodama* data relay satellite in geosynch.; Safe mode, signals noisy, Recovery unknown (Oct. 29)**

***DMSP F16 SSIES* sensor lost data twice, on Oct. 28 and Nov. 3; Recovered. Microwave sounder lost oscillator; Switched to redundant system.**

***RHESSI* satellite had 2 more spontaneous resets of CPU (28, 17:40; 29, 03:32).**

***CHIPS* satellite computer went offline on Oct. 29 and contact lost with the spacecraft for 18 hr. When contacted the S/C was tumbling; recovered successfully. Offline for a total of 27 hrs.**

***CDS* instrument on *SOHO* spacecraft at the L1 point commanded into Safe mode for 3 days ( Oct. 28-30).**

**Mars *Odyssey* spacecraft entered Safe mode and MARIE instrument had a temperature red alarm leading it to be powered off (Oct. 28). During downloading on Oct. 29, S/C had a memory error that was corrected with a cold reboot on Oct. 31.**

**The twin *Mars Explorer Rover* spacecraft both entered "Sun Idle" mode due to excessive start tracker events. Stable and will wait for recovery.**

***SIRTF*, in orbit drifting behind Earth, turned off science experiments and went to Earth pointing due to high proton fluxes (Oct. 28). 4 days of operations lost.**

***X-ray Timing Explorer* science satellite Proportional Counter Assembly (PCA) experienced high voltages and the All Sky Monitor autonomously**

**shut off (Oct. 29). On Oct. 30 both instruments recovered, but PCA again shut down. PCA recovery delayed into November.**

***Microwave Anisotropy Probe*** **spacecraft star tracker reset and backup tracker autonomously turned on (Oct. 28). Prime tracker recovered.**

**Two ultraviolet experiments on *GALEX* science satellite had excess charge so high voltages turned off. Detectors will remain off until later in Nov.**

**Despun platform on *Polar* satellite went "out of lock" 3 times but recovered automatically each time.**

**Some of the 4 *Cluster* spacecraft had processor resets but recovered.**

**NASA's Earth Sciences Mission Office directed all instruments on 5 spacecraft be turned off or safed due to Level 5 storm prediction (Oct. 29). Satellites affected: *AQUA, Landsat, TERRA, TOMS, TRMM*.**

**Wisconsin & New York: High current levels in transmission lines.**

**Changes prohibited to airplane routes N of 57$^{o}$ lat. Some U.S. flights rerouted. British trans-Atlantic routes moved south.**

**WAAS service interrupted in CONUS; High latitude GPS receiver outages**

**Military communications impacted (HF/UHF SATCOM)/OTH/Classified users**

**Loran C station in Newfoundland had interference.**

**Nov. 2:** ***Chandra*** **observations halted again autonomously due to radiation. Resumption of observations will be delayed for days.**

**Nov. 6:** ***Polar*** **TIDE instrument reset itself and high voltage supplies were disabled; recovered within 24 hr.**

**Mars *Odyssey* spacecraft commanded out of Safe mode; operations nominal.**

**General:**
**Satellite operators: Satellites put into safe modes, solar panels rotated, operations reduced.**

**Power grid managers: Less use of and switching between systems.**

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**Revised: 19 Nov. 2003, D. Webb (additions by JHA after talking to David)**